
Preface

WSTST05 Chairs Welcome Message

The stage for the Fourth IEEE International Workshop on Soft Computing as Transdisciplinary Science and Technology (WSTST05) has been set. On behalf of the WSTST05 program committee, we wish to extend a very warm welcome to the conference and Muroran in May 2005. The conference program committee has organized an exciting and invigorating program comprising presentations from distinguished experts in the field, and important and wide-ranging contributions on state-of-the-art research that provide new insights into current cutting edge results on Soft Computing as Transdisciplinary Science and Technology. WSTST05 is built on the success of the previous three events held in Muroran, Japan namely the IEEE International Workshop on Neuro Fuzzy Control, in 1993; IEEE International Workshop on Soft Computing in Industry, in 1996 and the IEEE International Workshop on Soft Computing in Industry, in 1999.

Soft Computing (SC) has an evolving collection of methodologies, which is aimed to exploit tolerance for imprecision uncertainty, and partial truth to achieve robustness, tractability, and low cost. SC provides attractive opportunity to represent the ambiguity in human thinking with real life uncertainty. Fuzzy logic (FL), Neural Networks (NN), and Evolutionary Computation (EC) were the core methodologies of soft computing. Later chaos computing, fractal theory, wavelet transformation, cellular automaton, percolation models, and immune network theory were added to enhance soft computing. However, they should not be viewed as competing with each other, but synergistic and complementary, instead. SC was actually the combination or fusion of each methodology which yielded new computational capabilities (hybrid systems). Soft computing is currently causing a paradigm shift (breakthrough) in science and technology.

The main themes addressed by this conference are:

- Intelligent hybrid systems
- Fusion of soft computing and hard computing
- Data mining and decision support systems
- Intelligent agent-based systems (complex systems), cognitive and reactive distributed AI systems
- Internet modeling
- Human interface
- Chance discovery
- Applications in image and speech signal processing, prediction, and control, robotics, biology and medicine, business and management, artificial societies, chemicals, pharmaceuticals and materials and environment engineering

WSTST05 is hosted by Muroran Institute of Technology, Japan and is technically co-sponsored by IEEE Systems Man and Cybernetics Society, World Federation on Soft Computing, European Society for Fuzzy Logic and Technology, Japan Society for Promotion of Science, Society of Instrumentation and Control Engineers (SICE, Japan), Transdisciplinary Federation of Science and Technology (Japan), JSPS International meeting series (Japan), and Life-Oriented Software Laboratory (Satellite Venture Business Laboratory), Muroran Institute of Technology (Japan).

The technical program of WSTST05 comprises of nearly 140 papers including 10 invited special sessions. The conference program committee had a very challenging task of choosing high quality submissions. Each paper was peer re-viewed by at least three or more independent referees of the program committee and the papers were selected based on the referee recommendations. The papers offers stimulating insights into emerging intelligent technologies and their applications in Internet security, chance discovery, humanized computational intelligence, web intelligence, data mining, image processing, swarm intelligence, optimization and so on. WSTST05 is blessed to have the presence of Professor Lotfi Zadeh (Father of fuzzy logic and soft computing) as the main plenary speaker of WSTST05. Besides, the following speakers will also deliver keynote addresses during WSTST05.

- Takeshi Furuhashi, Nagoya University, Japan
- Azuma Ohuchi, Hokkaido University, Japan
- Yukio Ohsawa, University of Tsukuba, Japan
- Antony Satyadas, IBM Corporation, USA
- Hideyuki Takagi, Kyushu University, Japan
- Toru Yamaguchi, Tokyo Metropolitan Institute of Technology, Japan
- Krzysztof Cios, University of Colorado, USA
- Zhiliang Wang, University of Science and Technology, China
- Kensuke Kawai, Toshiba Co., Japan

We would like to express our sincere thanks to all the authors and members of the program committee that has made this conference a success. Finally, we hope that you will find these proceedings to be a valuable resource in your professional, re-search, and educational activities whether you are a student, academic, researcher, or a practicing professional.

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